# The design and implementation of course selection system based on .NET Core framework

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*Abstract— With the continuous reform of college education, the rapid development of science and technology and the Internet, the digital campus technology is now gradually mature. In many colleges and universities, course selection is an important link. The traditional way of course selection has been unable to meet the needs of current education. Now using science and technology and the Internet to realize online course selection is an inevitable trend in the development of education in today's era. The online course selection system for students adopts B/S model architecture, which is based on the .net Core framework and Vue framework to build the course selection system architecture. MySql relational database management system is used to realize the data persistence of course selection system. This online course selection system is mainly divided into two parts: teacher end and student end. The main functions of the teacher side to include creating course selection task module, course selection task listed to display module, course selection task detail module and course selection task editing module. The student end includes the display module of course selection tasked list, student course selection module and course selection result module. The design and implementation of online course selection system will liberate educational administrators from the traditional way of course selection and greatly improve the working efficiency of educational administrators.*

*Keywords— Online courses;.net Core; Vue; MySql; B/S mode.*

## I. INTRODUCTION

With the deepening of education and teaching reform in Chinese colleges and universities, more and more colleges and universities adopt elective system, and the number of elective courses and students increases sharply.The amount of information of middle school students in elective courses also increases exponentially. At present, there are still complicated and tedious manual operations in the management of students' course selection, with excessive repetitive work, large workload and low work efficiency.So the realization of online course selection system is very important[1-3].

This online course selection system adopts the B/S architecture development mode, and completely separates the front and back ends to realize the function of student course selection management.NET Core development framework is adopted as the back-end architecture of online course selection system. Compared to the previous ASP.NET development framework,.net Core has greatly improved the performance of the product[4-7]. It is no longer bulky. Second, NET Core has realized the cross-platform function, so this online course selection system using.net Core development framework will largely solve the previous online course selection system is not cross-platform, and the performance of the shortcomings of instability. This online course selection system USES Vue as the front-end development framework. Vue is an incremental framework for building user interfaces that utilizes a new development philosophy of data-driven pages. Front-end page componentization management and two-way data binding technology make the page rendering of online course selection system faster

and more stable. This online course selection system USES.net Core and Vue as the development framework, and it will be a good attempt to use the emerging development technology [8-12].

## II.    MAIN THEORETICAL TECHNIQUES

### 2.1 NET Core

.NET Core is an open source universal development framework that supports the entire platform. In other words,.NET Core supports development and deployment on Windows, Mac OS, Linux and other operating systems. The source code for.net Core is located on GitHub and managed by Microsoft and the community. .NET Core's test results for framework performance[13-15],as shown in figure 1:
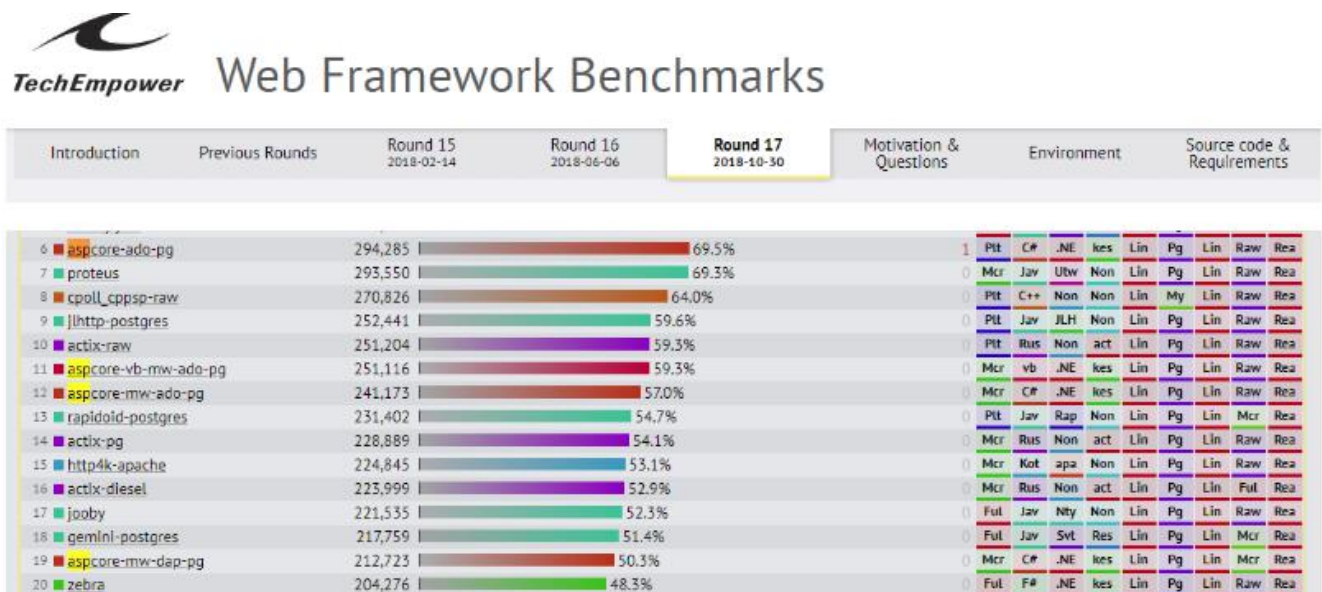


*Fig.1 .Net core Performance diagram*

### 2.2 EF Core Framework interfaces

EF Core, whose full name is Entity Framework Core, is a lightweight, extensible, open source, and cross-platform database access technology.EF Core is database access using a model.Where the model is composed of entity classes and the derived context representing the database session, as shown in figure 2.This can be very convenient to edit the database data.EF Core USES language integrated query (LINQ) to retrieve instances of entity classes from the database.EF Core also USES instances of the cadaver class to create, delete, and modify data in the database[16-19].
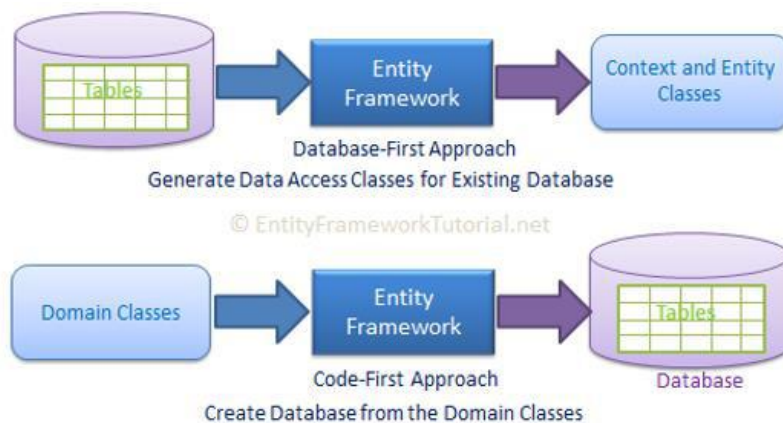


*Fig.2: EF Core Diagram of database connection patterns*

## III. FUNCTIONAL REQUIREMENT

### 3.1 Analysis of teacher-side functional requirements

1.The landing page design needs to display the ICONS of different schools, as well as the characteristic culture of the school, to show the culture and style of different schools. Secondly, the login window should be designed to realize the password input.When the login button is clicked, it is necessary to verify the correctness of the account and password, and prompt the account and password that fails to be verified, telling the log-in personnel that the account and password are entered incorrectly, and then the user is allowed to enter the home page of the system after verification.

2.The teacher's homepage needs to display all the list of course selection tasks. In the list of course selection tasks, it needs to display the name of course selection tasks, the campus, the total number of people selection tasks, the number of selected and unselected people, as well as the start and end time of course selection tasks and other basic information.The course selection list page shows the drop-down box of campus, the time selection box and the course selection name input box as the judging conditions for searching the course selection task list.The list also needs to display edit and delete buttons for editing or deleting course tasks.In the page of course selection task list, we need to add a button to create course selection task to realize the function of course selection task creation.

3.The course selection task page should include some basic information input or selection functions, such as course selection name, school district, start time, end time, course selection task description, and all course names contained in course selection task.In addition, we need to add a return button and a save button to save the course selection task and jump to the home page.

4.The page of course selection details needs to display all the basic information contained in the course selection task on the page, so that the teacher can have a detailed understanding of the course selection task information.This page only provides information display function. You cannot modify basic information of course selection task in the detail page.Need to add a back button, when click back button, jump to the home page page.

5.The editing page of course selection task mainly realizes modifying the created course selection task and saving the latest basic information of course selection task.However, the condition to enter the editing page of course selection task is that the start time of course selection task must be less than the start time of the day, that is, the selected course task can only be modified under the condition that it has not started yet.

### 3.2 Analysis of student-side functional requirements

1.The landing page design needs to display the ICONS of different schools, as well as the characteristic culture of the school, to show the culture and style of different schools.Secondly, the login window should be designed to realize the password input.When the login button is clicked, it is necessary to verify the correctness of the account and password, and prompt the account and password that fails to be verified, telling the log-in personnel that the account and password are entered incorrectly, and then the user is allowed to enter the home page of the system after verification.

2.The student's home page mainly display to show student's course selection task list, takes the form of a rectangular square, each course selection task simple information displayed on the page, each rectangle in the small square needs to show the name of the course tasks, start time and end time, elective state (and end) and whether the course tasks students have to pick the state curriculum judgment (has not choosing courses, course selection, the default state is not elective).

3.Students select the course management page. When students click the course selection task box, they will enter the course selection page.The course selection page shows the basic information of all courses for students' course selection task, which is displayed in the page in the form of course list.It need the subject type drop-down box and the course name input box on the page as criteria for filtering the course list.It also need a back button and a save button.When students do not choose a course, click the save button and it will prompt them to choose a course!!!cars onlyIf the course has been selected, click the "save" button, and the home page of the successful course selection box will appear.Clicking the back button does not save any course data, but returns directly to the home page.

4.The results page shows simple information about the course the student has chosen.The course selection page

needs to add a button to re-select the course, so that students can re-select the course.All previous courses will be cancelled in order to develop the selected courses as a new result of course selection.In addition, a return button needs to be added. When students confirm their selected courses, click the return button to jump to the home page.

## IV. IMPLEMENTATION OF MAIN FUNCTIONS

### 4.1 Login module

The UI design of the login page of the teacher end of the course selection system is shown in figure 3：
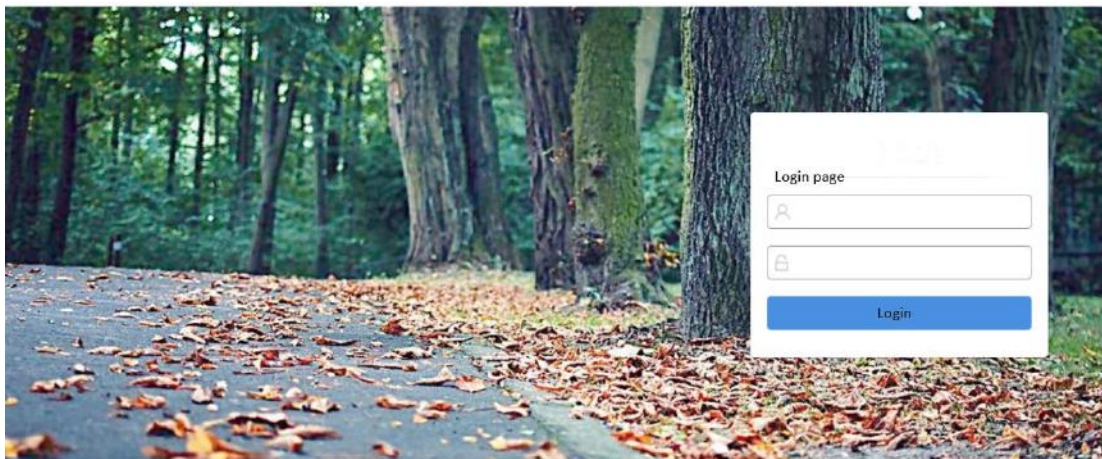


*Fig.3: Login Page*

The login page mainly realizes the functions of teachers and students to login the system. After entering the account and password, the system will do login verification after clicking the login button.In this design, the front page is empty to verify the value of the input box, and the back end will verify the correctness of the data.

### 4.2 Student-side choose the course task display

The UI design of the task list of student selection is shown in figure 4.The list of course selectors is displayed in small squares, each of which represents a course selection task.Basic information such as course name, start time, end time and status of course selection task will be displayed in each small square area.Only when the status of the selected course task is in progress will it be displayed on the student side of the course selection list page.When clicking the course selection task box, if the student does not select a course, the course selection page will jump to the result page otherwise.
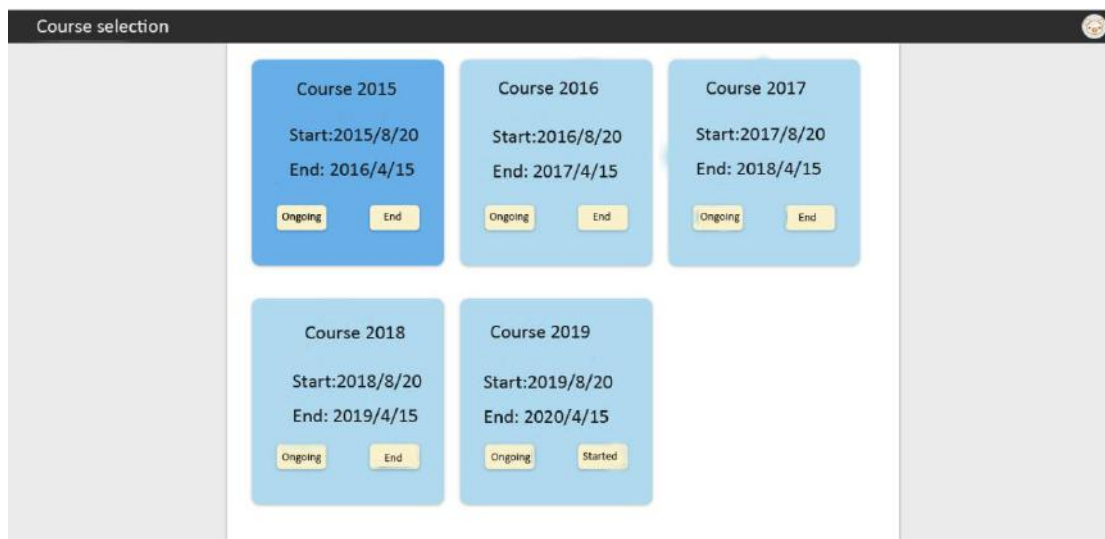


*Fig.4: Task list page*

**4.3 Student-side student course selection function**

The UI design of student's course selection page is shown in figure 5.When students enter the course selection page, the page mainly shows the course name, course description, course type, credits and planned periods of course selection tasks.At the top right of the list are two filters, the course type and the course name, to filter the course.The top left of the course selection page is the save button and the return button. When you click the save button, first check whether you have selected the course information. If you have not selected the course information, it will prompt that you have not selected the course! Otherwise, it will save the selected courses and jump to the homepage of the course selection system.After clicking the back button, no course information will be saved and it will jump to the homepage of the course selection system.
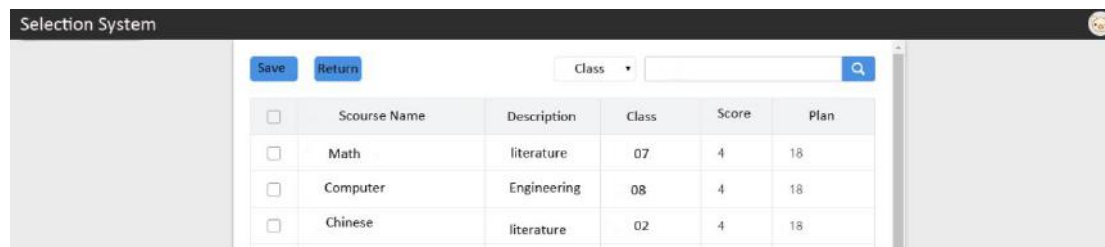


*Fig.5: Course selection page*

## V. CONCLUSION

This design is an online course selection system based on the.Net Core framework. Its function is mainly to achieve the teacher to create a course selection task online and release the task to students, as well as the management of course selection information. In addition, students can choose all courses published in the course selection task according to their interests and hobbies online. The whole course selection system is designed with front and rear end separation mode, so as to facilitate the management of front and rear end code. Of course, this design still has a lot of shortcomings, I hope I can improve it through continuous efforts in the future.

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